

**Notice of Allowability**

Application No.

09/857,187

Examiner

Mark Ruthkosky

Applicant(s)

SAKAMOTO ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 3/8/2005.
2. ☒ The allowed claim(s) is/are 1,2,4-13 and 16-23.
3. ☒ The drawings filed on 20 June 2001 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
  1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

**MARK RUTHKOSKY  
PRIMARY EXAMINER**

*[Signature]* 4/13/05

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

The rejection of claims 1-2, 4 and 7 under 35 U.S.C. 103(a) as being unpatentable over Hiroshi (JP 03-263,756), and further in view of Rossoll (US 5,336,273) has been overcome by the applicant's amendment.

### ***Examiner's Amendment***

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows: In claim 16, line 1, before the word process; add the word "A".

### ***Allowable Subject Matter***

Claims 1, 2, 4-13 and 16-23 are allowed.

The instant claims are to a process for producing a lead-acid battery comprising the step of welding together a lead bushing integrally cast in a lid of an assembled lead-acid battery and a pole inserted through the lead bushing by laser welding wherein both the pole and the lead bushing are made of a lead-calcium based alloy and at the time of laser welding a laser beam of low output is applied first and thereafter a laser beam of high output is applied. The prior art

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does not teach a process for producing a lead-acid battery comprising the step of welding together a lead bushing integrally cast in a lid of an assembled lead-acid battery and a pole inserted through the lead bushing by laser welding wherein both the pole and the lead bushing are made of a lead-calcium based alloy and at the time of laser welding a laser beam of low output is applied first and thereafter a laser beam of high output is applied.

Hiroshi (JP 03-263,756) teaches a lead-acid battery with a lead bushing integrally cast in the lid of a lead-acid battery with a Pb-Ca pole inserted through the lead bushing (abstract.) The bushing cup section and pole are formed with a Pb-Ca alloy and are welded together with Pb-Ca alloys. A tab terminal is mounted on the bushing. The pole is provided with a projection at the center of the upper surface (figure.) The reference does not teach the welding to be laser welding or at the time of laser welding, a laser beam of low output is applied first and thereafter a laser beam of high output is applied.

Laser welding is well described in the battery art for welding materials of a battery (for examples see US 6,193,765 to Nakanishi, JP 35-7103265 to Morinari, JP 40-8293299 to Ogawa, JP 35-9171461 to Watanabe and JP 36-2268055.) Rossoll (US 5,336,273) teaches the sealing of a battery by laser welding wherein a terminal is laser welded to a battery frame. The frame includes a metal portion on which a metal terminal is welded using a laser. The reference does not teach a pole and lead bushing made of a lead-calcium alloy or that at the time of laser welding, a laser beam of low output is applied first and thereafter a laser beam of high output is applied.

Claims 2, 5 and 6 are further to processes where the welding of a lead-calcium alloy is performed by a laser beam of low output followed by a beam of high output. Claim 8 is to a

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process wherein a lap density of beads in the laser welding of the pulsed type is in the range of 6-12 points per mm. Claims 9-13 are to a process wherein terminal portions are surrounded by a lower cylindrical end portion of a cylindrical shield, and fumes generated by welding are sucked through an exhaust port in the shield. The prior art does not include teachings of these features in a process for producing a lead-acid battery comprising a lead bushing integrally cast in a lid of the battery and a pole inserted through the lead bushing wherein the bushing and pole are welded together by laser welding.

The most pertinent art has been cited. Hiroshi (JP 03-263,756) teaches a lead-acid battery with a lead bushing integrally cast in the lid of a lead-acid battery with a Pb-Ca pole inserted through the lead bushing (abstract.) Rossoll (US 5,336,273) teaches the sealing of a battery by laser welding wherein a terminal is laser welded to a battery frame. The prior art does not teach a process for producing a lead-acid battery comprising the step of welding together a lead bushing integrally cast in a lid of an assembled lead-acid battery and a pole inserted through the lead bushing by laser welding, wherein the welding is performed by a laser beam of low output followed by a beam of high output, a lap density of beads in the laser welding of the pulsed type is in the range of 6-12 points per mm or terminal portions are surrounded by a lower cylindrical end portion of a cylindrical shield, and fumes generated by welding are sucked through an exhaust port in the shield. As the prior art does not teach these processes, as claimed, the instant claims are allowed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

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fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

*Examiner Correspondence*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mark Ruthkosky

Primary Patent Examiner

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*Mark Ruthkosky*  
*4/13/05*